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A2 1. (Amended) Seed of maize inbred line designated PH54M, representative seed of said line having been deposited under ATCC Accession No. PTA-4527.

A3 3. (Amended) The maize plant of claim 2, wherein said plant is detasseled.

4. (Amended) A tissue culture of regenerable cells or protoplasts from the plant of claim 2.

A4 6. (Amended) A maize plant regenerated from the tissue culture of claim 4, capable of expressing all the morphological and physiological characteristics of inbred line PH54M, representative seed of which have been deposited under ATCC Accession No. PTA-4527.

A5 8. (Amended) The method of claim 7 wherein the plant of inbred maize line PH54M is the female or male parent.

A6 11. (Amended) The maize plant, or parts thereof, of claim 2, wherein the plant or parts thereof have been transformed so that its genetic material contains one or more transgenes that confer a qualitative trait.

12. (Amended) A method for producing a first generation (F1) maize plant comprising crossing the maize plant of claim 11 with a second plant.

13. (Amended) The first generation (F1) maize plant, or parts thereof, produced by the method of claim 12.

14. (Amended) A maize plant, or parts thereof, wherein at least one ancestor of said maize plant is the maize plant of claim 2, said maize plant expressing a combination of at least two PH54M traits which are not significantly different from PH54M traits when determined at a 5% significance level and when grown in the same environmental conditions, said PH54M traits selected from the group consisting of: a relative maturity of 98 based on the Comparative Relative

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Maturity Rating System for harvest moisture of grain, grain yield, resistance to late season stalk lodging, and resistance to Northern Leaf Blight.

15. (Amended) A method for developing a PH54M-progeny maize plant in a maize plant breeding program using plant breeding techniques, which include employing a maize plant, or its parts, as a source of plant breeding material, comprising: obtaining the maize plant, or its parts, of claim 2 as a source of said breeding material.

16. (Amended) The method of claim 15 wherein plant breeding techniques are selected from the group consisting of: recurrent selection, backcrossing, pedigree breeding, restriction fragment length polymorphism enhanced selection, genetic marker enhanced selection, and transformation.

17. (Amended) The PH54M-progeny maize plant, or parts thereof, produced by the method of claim 15 wherein the method comprises 2 or less crosses to a plant other than PH54M or a plant that has PH54M as a parent.

18. (Amended) The maize plant, or parts thereof, of claim 2, further comprising one or more genes that confer a qualitative trait and have been transferred into said maize plant through breeding methods that utilize PH54M as a recurrent parent.

19. (Amended) The maize plant of claim 18, wherein at least one of the genes is a dominant allele.

20. (Amended) The maize plant of claim 18, wherein at least one of the genes is a recessive allele.

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21. (Amended) A maize plant, or parts thereof, having all the physiological and morphological characteristics of inbred line PH54M, representative seed of said line having been deposited under ATCC Accession No. PTA-4527.

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22. (Amended) The maize plant of claim 2, wherein genes controlling male sterility have been transferred into said maize plant through crossing, wherein PH54M is a recurrent parent, and wherein said maize plant has essentially the same morphology and physiology of inbred maize line PH54M other than the trait of male sterility.

23. (Amended) A tissue culture of regenerable cells or protoplasts from the plant of claim 21.

25. (Amended) A maize plant regenerated from the tissue culture of claim 23, capable of expressing all the morphological and physiological characteristics of inbred line PH54M, representative seed of which have been deposited under ATCC Accession No. PTA-4527.

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27. (Amended) The method of claim 26 wherein the inbred maize plant having all the morphological and physiological characteristics of inbred maize plant PH54M is the female or male parent.

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33. (Amended) A PH54M-progeny maize plant, or parts thereof, wherein at least one ancestor of said PH54M-progeny maize plant is the maize plant of claim 2, and wherein the pedigree of said PH54M-progeny maize plant is within 2 or less crosses to a plant other than PH54M or a plant that has PH54M as a parent.

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34. (Amended) A method for developing a PH54M-progeny maize plant in a maize plant breeding program using plant breeding techniques, which include employing a maize plant, or its parts, as a source of plant breeding material,

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comprising: obtaining the maize plant, or its parts, of claim 21 as a source of said breeding material.

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35. (Amended) The method of claim 34 wherein plant breeding techniques are selected from the group consisting of: recurrent selection, backcrossing, pedigree breeding, restriction fragment length polymorphism enhanced selection, genetic marker enhanced selection, and transformation.

36. (Amended) The PH54M-progeny maize plant, or parts thereof, produced by the method of claim 34 wherein the method comprises 2 or less crosses to a plant other than PH54M or a plant that has PH54M as a parent.

37. (Amended) A process for producing inbred PH54M, representative seed of which have been deposited under ATCC Accession No. PTA-4527, comprising:

- (a) planting a collection of seed comprising seed of a hybrid, one of whose parents is inbred PH54M said collection also comprising seed of said inbred;
- (b) growing plants from said collection of seed;
- (c) identifying said inbred PH54M plants;
- (d) selecting said inbred PH54M plant; and
- (e) controlling pollination in a manner which preserves the homozygosity of said inbred PH54M plant.

40. (Amended) A method for producing a first generation (F1) PH54M-progeny maize plant, comprising:

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- (a) crossing inbred maize line PH54M, representative seed of said line having been deposited under ATCC Accession No. PTA-4527, with a second maize plant to yield progeny maize seed;
- (b) growing said progeny maize seed, under plant growth conditions, to yield said first generation PH54M-progeny maize plant.

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41. (Amended) A first generation (F1) PH54M-progeny maize plant, or parts thereof, produced by the method of claim 40.

42. (Amended) A method for producing a PH54M progeny inbred maize plant, comprising generating the first generation (F1) PH54M-progeny maize plant by the method of claim 40 and further comprising: selfing said first generation (F1) PH54M-progeny maize plant for successive filial generations to generate a PH54M inbred progeny maize plant.

43. (Amended) The PH54M inbred progeny maize plant, or parts thereof, produced by the method of claim 42.

47. (Amended) The maize plant, or parts thereof, of claim 2, further comprising one or more genes that have been transferred into said maize plant by utilizing PH54M as a recurrent parent and wherein the maize plant, or parts thereof, are essentially unchanged from inbred maize line PH54M.

48. (Amended) The maize plant of claim 47, wherein at least one of the genes is a dominant allele.

49. (Amended) The maize plant of claim 47, wherein at least one of the genes is a recessive allele.

50. (New) The maize plant of claim 2 further comprising a gene wherein said gene confers a trait selected from the group consisting of herbicide resistance, insect resistance, disease resistance, white grain, and waxy grain.

51. (New) The method of developing an inbred PH54M maize plant conferring a backcrossed trait comprising crossing the maize plant of claim 2 to a second maize plant and utilizing PH54M as the recurrent parent .

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52. (New) The inbred PH54M maize plant conferring a backcrossed trait of claim 51, wherein said inbred PH54M maize plant conferring a backcrossed trait has essentially the same traits as inbred PH54M except for the backcrossed trait and wherein the backcrossed in trait is selected from a group consisting of herbicide resistance, insect resistance, disease resistance, white grain and waxy grain.

53. (New) The method of crossing the inbred PH54M maize plant conferring a backcrossed trait of claim 52 with a second maize plant to develop a first generation (F1) maize plant.
